

Tribal TAB Program

*Providing “Technical Assistance
to Brownfields” to all U.S.
Federally Recognized Tribes!*



TAB

TECHNICAL ASSISTANCE TO BROWNFIELDS

KANSAS STATE
UNIVERSITY

A stylized, layered landscape illustration. The foreground consists of rolling green hills with varying shades of green. A dark brown path or stream winds through the hills. On the left, there are stylized trees and flowers: a green tree, a purple flower, and an orange flower. A small red bird is flying in the upper left. The background features light blue and white wavy bands representing the sky.

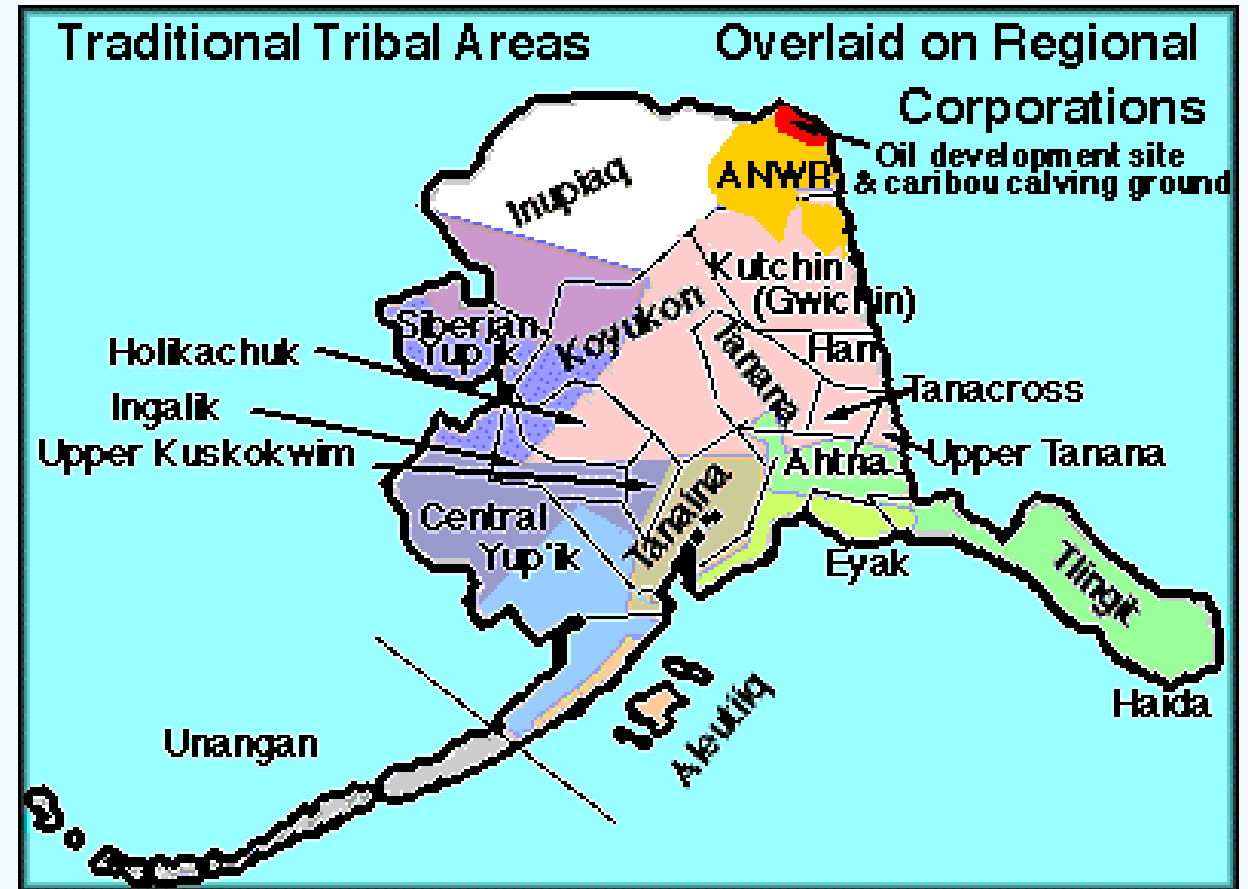
Mickey Hartnett: KSU Tribal TAB Program

Tribal TAB in Alaska

In Partnership with:
the Division of
Community Health
Services | Alaska
Native Tribal Health
Consortium
(ANTHC)



ALASKA NATIVE
TRIBAL HEALTH
CONSORTIUM





ANTHC TRP Role:

- *Leading development of online Tribal Brownfields Forum*
 - *Forum using similar framework to LEO Network*
- *Act as ongoing technical assistance hub for Alaska tribes*



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TECHNICAL ASSISTANCE TO BROWNFIELDS

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CERCLA 128(a): Tribal Response Program (TRP)



QAPPs and Cleanup
Standards: What are they?
Who needs them? Who
decides what?

(an overview)



An Overview of:

- QAPPs
- Cleanup Standards
- Risk Assessments

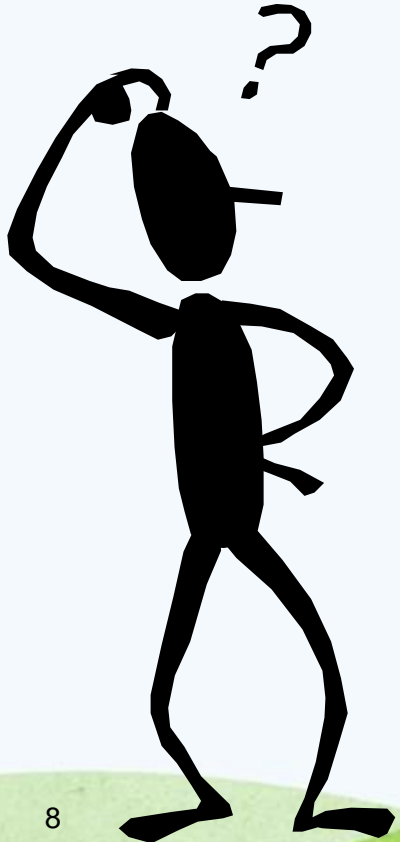


Quality Assurance Project Plans (QAPPs) and related plans.

- ✓ Field Sampling Plan (FSP)
- ✓ Sampling & Analysis Plan (SAP)



What are “Quality Assurance Project Plans” (QAPPs) and why are they important to me?



I think I saw the cat QAPP in that box!

What is a QA Project Plan?

A document that describes the technical and quality activities of an environmental data acquisition project that should be implemented to ensure that the results of the work performed will satisfy the data user's needs.

What is meant by environmental data?

Information that describes environmental processes, locations or conditions, and health effects or consequences.

It can be: Sampling data of air, water, soils, sediment, biota, organisms, etc.

Why should there be a QA Project Plan?

QA Project Plans are prepared for all EPA projects and tasks involving environmental data operations. (generating or using environmental data).

Non-EPA organizations which receive EPA funds need to satisfy those requirements (defined in the Code of Federal Regulations).

QA Project Planning and QA Project Plan Preparation

Developing a QAPP should be a Team Effort involving all those that will use the data to make decisions; and those that may be affected by such decisions.



What guidance is available?



U.S. EPA Guidances: Contact Mary Goolie, Region 10 Office, Anchorage, AK



ADEM Guidance: dec.alaska.gov/spar/csp

- Field Sampling Guidance
- Site Characterization Work Plan
- Reporting Guidance for Investigation of Contaminated Sites

What is the value of having an approved QA Project Plan?

- ✓ *Doing the Right Things the Right Way the First Time!*
- ✓ *Appropriate data and credible decision making*

What is a “Quality Assurance Management Plan”
(QAMP)?
(HINT: It is NOT a QAPP!)

The QAMP describes the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of the organization.

*How can I provide input into
the development of a QAPP ?*



Is that when I sniff things?

Provide input into the
“Data Quality Objectives”
(DQOs)?

Provide “TEK”



What is a DQO?
Is that when I sniff things?



What are DQOs?

- A Planning Tool
- Cost Management
- *Decision Identification*
- *Clear Goals*
- Contingency Planning

“DQO”s

“The DQO Process* is used to:

Establish performance and acceptance criteria, which serve as the basis for designing a plan for collecting data of sufficient quality and quantity to support the goals of the study.

Use of the DQO Process leads to efficient and effective expenditure of resources; and

consensus on the type, quality, and quantity of data needed to meet the project goal.

*Guidance on Systematic Planning Using the Data Quality Objectives Process
EPA QA/G-4 EPA/240/B-06/001 February 2006

7 Steps in the Development of “DQOs”



- 1) PROBLEM STATEMENT
- 2) IDENTIFY THE DECISION(S) OR QUESTIONS
- 3) DESCRIBE THE INPUTS TO THE DECISION(S)
- 4) DESCRIBE THE BOUNDARIES TO THE STUDY AREA
- 5) DEVELOP THE DECISION RULE
- 6) SPECIFY LIMITS ON UNCERTAINTIES
- 7) OPTIMIZE THE STUDY DESIGN

Who could provide input into DQOs?

- ✓ Federal/State Regulator(s)
- ✓ Contractor(s)
- ✓ Local Govt./Tribe
- ✓ Property Owner
- ✓ Other Decision Makers
- ✓ Public

EPA Brownfields QAPP Guidance

“Brownfields Grant Recipients’ Road Map to Understanding Quality Assurance Project Plans”

(November 2012 EPA 542-R-12-005, OSWER)

- <https://www.epa.gov/remedytech/brownfields-grant-recipients-road-map-understanding-quality-assurance-project-plans>
- <https://www.ksutab.org/?ResponseView=TABResourceDownloadView&id=505>

Why have Tribal Cleanup Standards?



Have you seen what the cat did in that box?

TRP Element 2

Indian tribes must include, or be taking reasonable steps to include, in their response programs:

- 1) Oversight and enforcement authorities or other mechanisms, and resources *that are adequate to ensure that a response action will protect human health and the environment and be conducted in accordance with applicable federal and tribal law.*

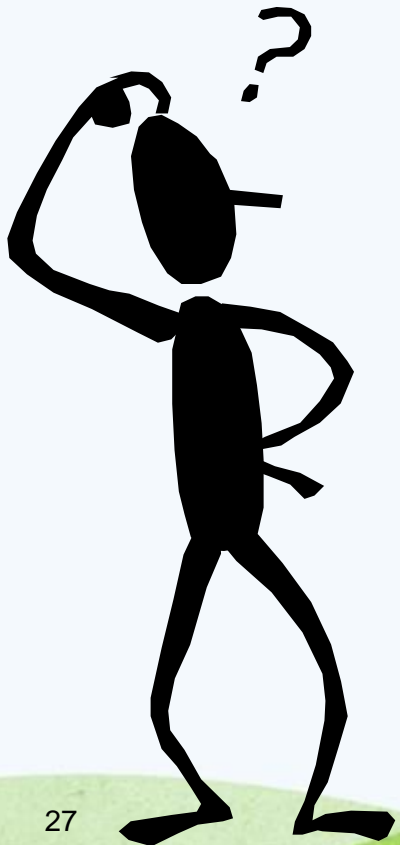
TRP Element 2

- 2) Oversight and enforcement authorities or other mechanisms, and resources *that are adequate to ensure that the necessary response activities are completed if the person conducting the response activities, including operation and maintenance or long-term monitoring activities, fails to complete the activity* (such as enforcement, funding, or other programmatic resources, including staff).

TRP Element 4:

Mechanisms for approval of a cleanup plan, and a requirement for verification by and certification or similar documentation from the State, an Indian tribe, or a licensed site professional to the person conducting a response action indicating that the response is complete.

*Should my Tribe or Community establish
Cleanup Standards and/or a Cleanup
decision making process?*



Have you cleaned out the cat box?

Cleanup Standards

Clean up standards can be established in two ways:

- Establishing a decision making process and designating who the decision maker is (i.e. Tribal Council, Tribal Chair, Environmental Director, etc.); and/or
- Adopting specific cleanup standards for @ chemical or substance.



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First: Development of “Cleanup” Authorities



Jurisdiction vs Authority

Understand the difference between:

- Jurisdiction*: Established by Treaty and federal laws and legal precedents

and

- Authority: Established by Tribal laws and Codes

*Federal Govt. and/or State of Alaska (ADEC) has jurisdiction
In most locations in AK.

Tribal Authority

U.S. EPA: Eligible grant activities include, but are not limited to, development of legislation, regulations, procedures, ordinances, guidance, etc. that would establish or enhance the administrative and legal structure of their response programs.

NOTE: Federal and State laws/regs. can be a model for development of Tribal laws and codes/regulations but usually require some adaptation to Tribal applications.

Tribal Cleanup Standards

- Under the TRP -The Tribes may establish the cleanup standards or goals for the cleanups conducted under their programs via tribal laws, codes or resolutions. (where the Tribe has jurisdiction)
- A typical cleanup or response is conducted to meet site specific “risk based” goals or cleanup standard(s).
- Use the AK-DEC and EPA guidelines, experts and resources!

DEPARTMENT OF ENVIRONMENTAL CONSERVATION 18 AAC 60 SOLID WASTE MANAGEMENT

INCLUDES CLEANUP PROCESS AND STANDARDS



ALASKA DEC CLEANUP PROCESS & STANDARDS

- The following link shows the typical cleanup process used for most contaminated sites: dec.alaska.gov/spar/csp This link also provides links to other guidance and regulations that the DEC uses to make cleanup and closure decisions. You'll also find soil and groundwater cleanup levels on this web page.
 - If, for whatever reason, the community wishes to set its own cleanup levels, the new levels would be required to be *at least as stringent* as those established by DEC.
-

AK-DEC: 4 METHODS TO DETERMINE CLEAN UP LEVELS

- **Method 1 Provides historical cleanup levels** that are mostly used for sites that are regulated under the Spill Response section of DEC and involve fresher releases of petroleum hydrocarbons.
 - **Method 2 Provides default cleanup levels** that account for *Direct Contact* and *Outdoor Inhalation* health-based exposure pathways and for the *Migration to Groundwater* pathway. These cleanup levels are what are primarily used to assess cleanup at most contaminated sites in Alaska. DEC also provides a calculator for developing alternative cleanup levels.
-

AK-DEC: 4 METHODS TO DETERMINE CLEAN UP LEVELS

- **Method 3 Look up Risk and Cleanup Calculator at:**
dec.alaska.gov/spar/csp This calculator provides a way to develop site-specific cleanup levels at a site where there is site-specific data (i.e. specific type of soil) that would possibly allow for less conservative cleanup levels.
 - **Method 4 allows site-specific cleanup levels** to be developed based on the results of a risk assessment. A risk assessment is very expensive and requires extensive sampling and data from the contaminated site.
-

AK-DEC: Methods to Determine Clean up Levels

“A community cannot ‘**set its own cleanup levels**’ unless they have somehow established some sort of enforcement authority.”

“**Any stakeholder can be a part of establishing cleanup levels through AK-DEC Methods 3 and 4**, which involve incorporating site-specific criteria into the cleanup level equations, or through a risk assessment.”

EPA Laws & Regulations

Federal Laws and U.S. EPA regulations that govern response actions include:

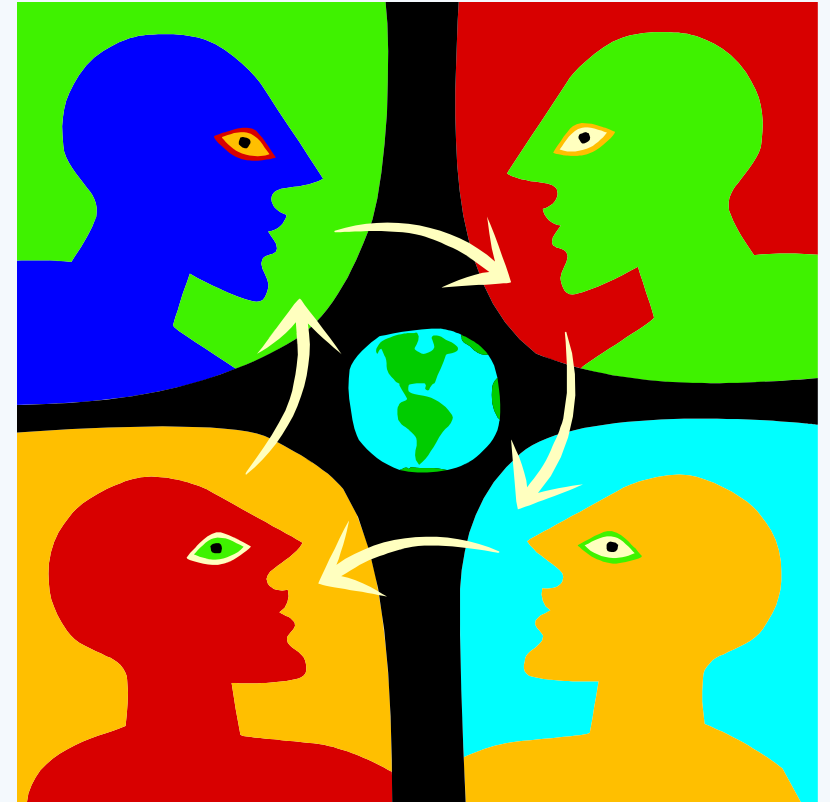
- CERCLA (aka Superfund): must apply “ARARs”^{*};
- RCRA Corrective Action & LUST regulations;
- Asbestos Abatement under the Clean Air Act;
- TSCA for Lead Based Paint & PCB remediation and disposal;
- etc.

^{*}Applicable Relevant and Appropriate Requirements

Steps: Cleanup Oversight

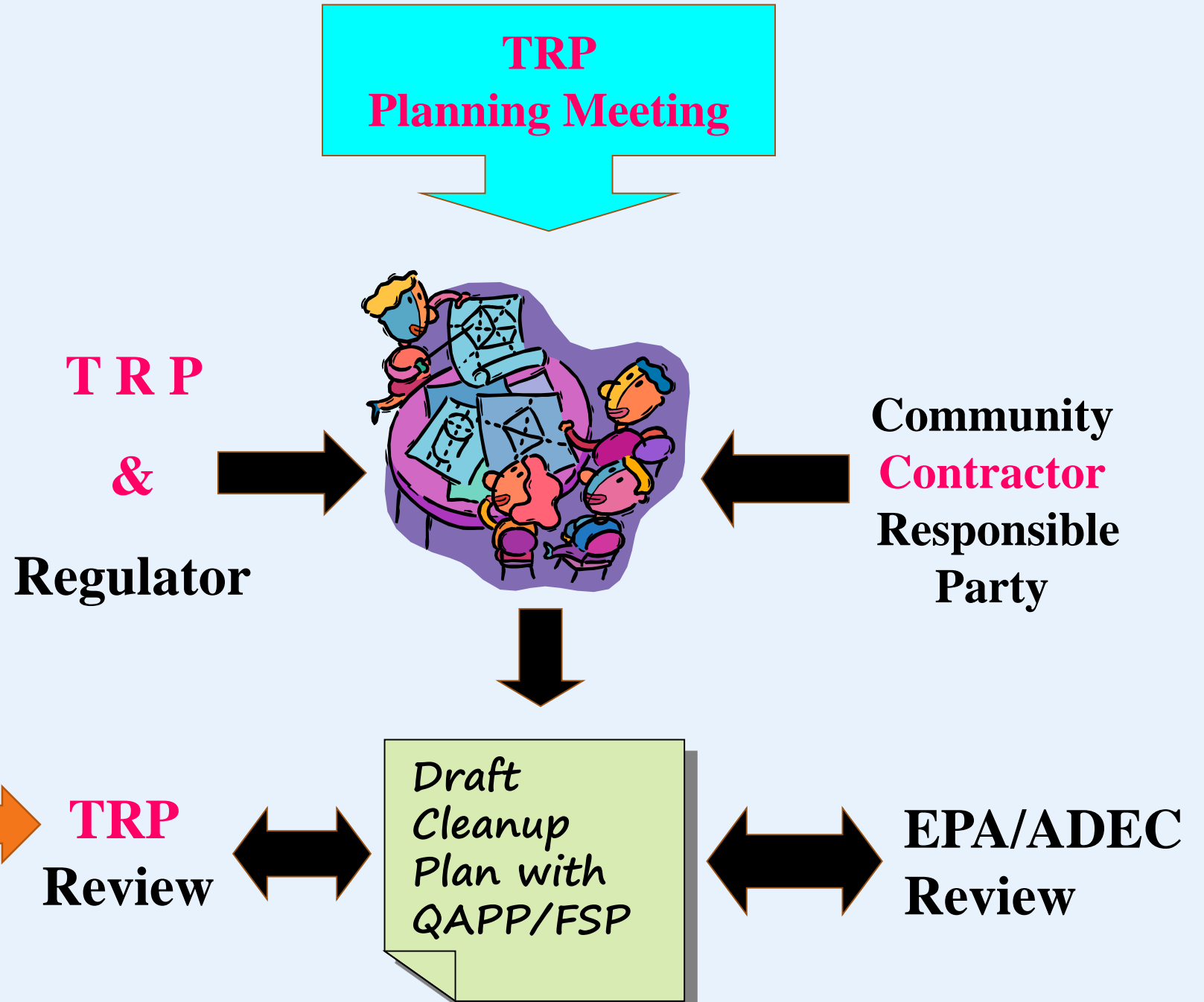
Cleanup Adequacy:

- What are site end use and cleanup goal(s)?
- Have all local/tribal exposures been addressed?
- What are the “Data Quality Objectives”?



Typical Clean up Planning Process

Insert
Data Quality
Objectives
(DQOs)
Here!

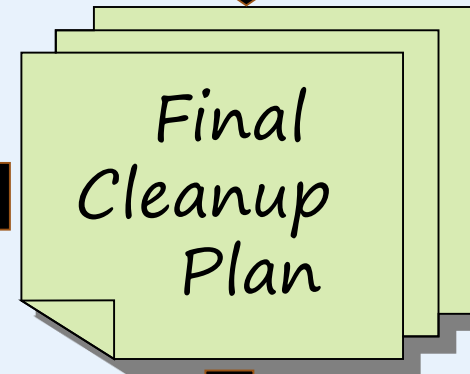




Public Meeting(s)



Check Cleanup Goals here!



**Cleanup
Conducted**



*Cleanup
Planning
Process*

Cleanup Methods & Goals

Under federal programs (and funding) a *range of alternatives* is usually considered in the development of a response plan and then a decision is made, with community input, on the appropriate response to take, and the appropriate cleanup levels/goals to be obtained, *considering several factors* which can include:

Factors to be Considered:

- *Protection of human health and the environment*
- *Effectiveness (long & short term)*
- *“implementability”*
- *cost*
- *compliance with all applicable laws, regulations and codes**
- *community acceptance*

**Other Tribal Criteria or “ARARs”?*

Cleanup Completion

The completion of a response action is dependent on the:

- required actions;
- planned time-frames*; and
- cleanup standards & goals;

That are established in the cleanup plan.

**Note: “Stuff Happens!”*

Determining Completion

Determining completion can be evaluated by visual observation in some cases but typically it will involve conducting confirmation or verification sampling and analysis to determine if the required cleanup levels and goals have been achieved.

Understanding “RISKS”

Concepts to Learn:

- ✓ *Site Exposure Pathways*
- ✓ *Exposure Targets*
- ✓ *Background Levels*
- ✓ *Regional Screening Levels (RSLs)*
- ✓ *Preliminary Remedial Goals (PRGs)*

These all lead to: Final Cleanup Goals

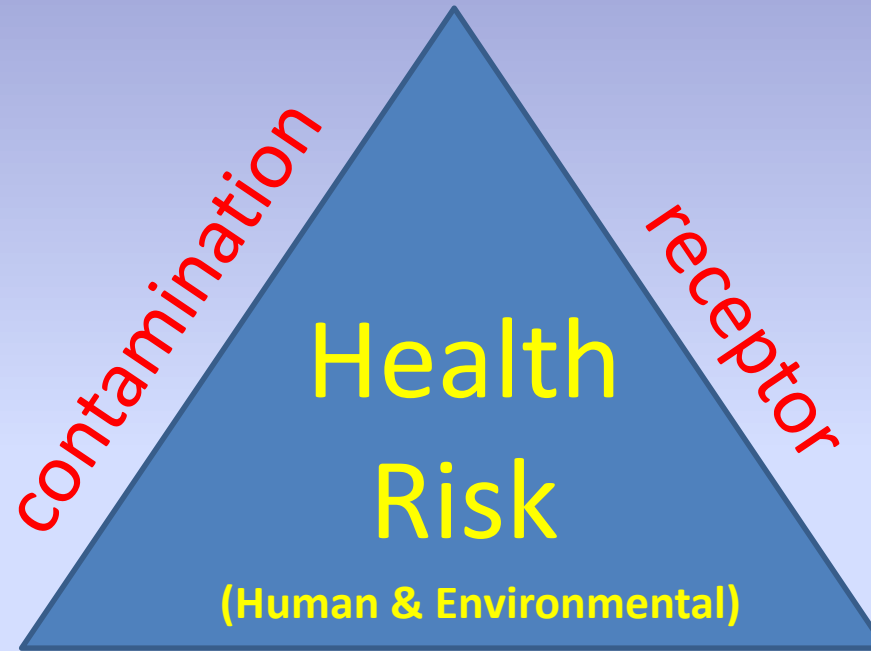
ACRONYMS: *the Language of Risk*

- *HRS = Hazard Ranking System (EPA Superfund)*
- *PRGs = Preliminary Remediation Goals* (updated)*
- *RSL = Regional Screening Levels* (updated)*
- *TBA = Targeted Brownfield Assessment*
- *QAPP/FSP/DQOs* – Data Quality Requirements & Methods*
- *RBCA = Risk Based Corrective Action*
- *ND = ?*

** Consult EPA website and guidances*

Anatomy of Risk-Based Environmental Cleanups

- VOCs
- SVOCs
- Inorganics
- Pesticides
- PCBs



- People
 - Community/Private Water Supply Wells
 - Surface Water Bodies
- Animals &/or Plants
 - Sensitive Ecological Areas (wetlands, surface water bodies, etc.)

exposure route or pathway

- Soil Ingestion
- Soil Inhalation
- Groundwater Ingestion

Exposure Pathways



Pathways

There are 5 Pathways by which Contamination can leave a Brownfields Site

Air Pathway	Soil Pathway	Surface Water Pathway	Groundwater Pathway	Biological Pathway
1. smoke from burning trash; 2. landfill gases; methane and vapors; 3. particulate matter, dust	1. workers at a site; 2. people recreating on a site; 3. people walking across a site.	1. runoff to a stream, lake, or wetland; 2. storm runoff to a storm drain	1. contaminated liquids soaking into the soil and flowing away in a groundwater plume. 2. seeps to surface water	1. rodents and vermin; 2. mosquitos; 3. molds

A photograph of a row of abandoned houses. The houses have peeling white paint, boarded-up windows, and a brick chimney. A concrete walkway leads between the houses. The sky is blue with some clouds. The text "Lead Based Paint released from abandoned buildings" is overlaid on the bottom half of the image.

**Lead Based Paint
released from abandoned
buildings**

Pathway: Release to Environment Lead Based Paint (LBP)



Proximity of Brownfield Site to Sensitive “Receptors”



Old buildings next to Head Start

Old Church next to Day Care



“Background Levels”



Definition?

The naturally occurring levels
of a substance in the local
environment

Risk Assessment Assumptions



- **Residential:** Where people live and play, including children, 24/7/365.
- **INDUSTRIAL:** Where people work 40 hrs. a week (5 days)
- **OTHER:** ???

Screening Levels – Substance: Arsenic



- ✓ **EPA Regional Screening Levels:** = *EPA Region 9 Preliminary Remediation Goals (PRGs)*
 - **Industrial = 1.6 mg/kg (c)**
 - **Residential = 0.39 mg/kg (c)**
 - c = Cancer

- ✓ **EPA Regional Screening for Superfund Hazard Ranking System (HRS)* = 3 times background**
3 X 8mg/kg (Background) = 24 mg/kg

Use of Screening Levels:



“Screening levels should not be used as cleanup levels.

Cleanup levels need to be determined through the performance of a risk assessment, which takes into account exposure pathway, affected population, toxicity, and exposure concentrations.”

Cleanup Goals?

US EPA REGIONAL SCREENING LEVELS* (RSLs) IN (MG/KG)



* Data for illustrative purposes only

ARSENIC RESIDENTIAL SOILS*							
Cancer Risk = 1E-06				Chronic HQ = 1			
soil-inhale	soil-dermal	soil-ingest	combined	soil-inhale	soil-dermal	soil-ingest	combined
5.90E+02	4.50E+00	4.30E-01	3.90E-01		2.80E+02	2.30E+01	2.20E+01

3.90E-01 = 0.39 mg/kg

Cleanup Goals?

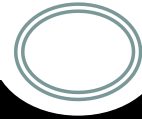
US EPA Regional Screening Levels* (RSLs) IN (mg/kg)

* Data for illustrative purposes only

ARSENIC INDUSTRIAL SOIL*							
Cancer Risk = 1E-06				= 1	Chronic HQ		
soil-inhale	soil-dermal	soil-ingest	combined	soil-inhale	soil-dermal	soil-ingest	combined
1.30E+03	9.60E+00	1.90E+00	1.60E+00		1.50E+03	3.10E+02	2.60E+02
1.60E+03	1.50E+00	3.00E-01	2.50E-01				

1.60E + 00 = 1.6 mg/kg

NOTE: Updates on Risk Levels



NOTE: Regional Screening Levels (RSLs) for contaminants in various media are periodically updated as well as changes in risk terminology and acronyms. Please check with ADEC and the US EPA for the latest data and information.

Who can I go to for assistance
on assessment of Risks and
appropriate cleanup levels?

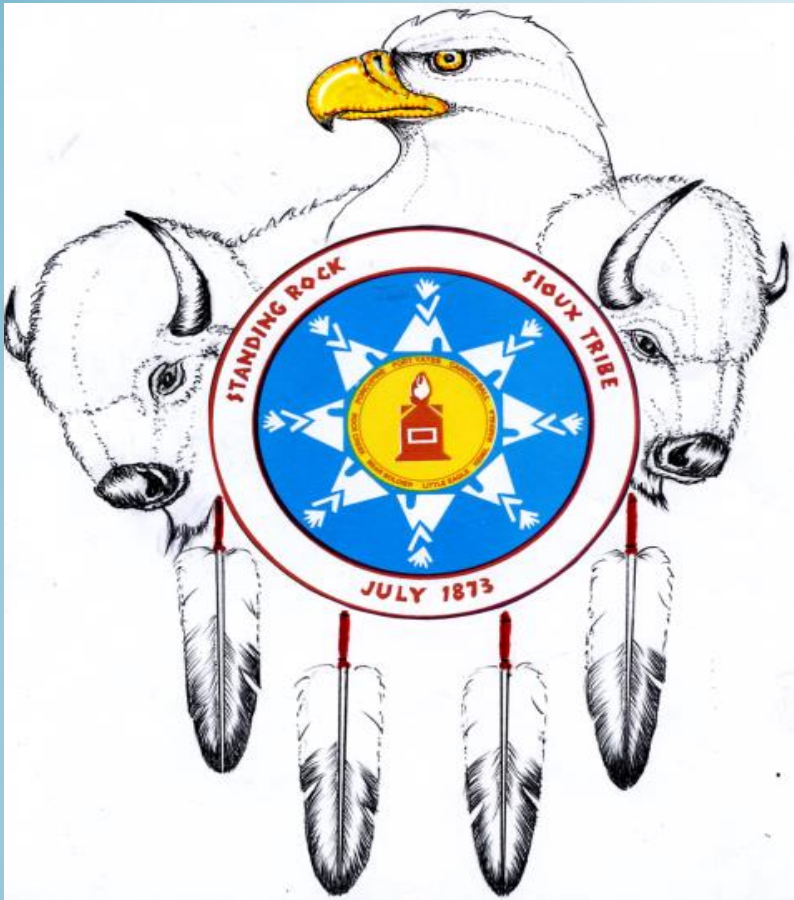


- ✓ ANTHC
- ✓ US EPA – Regional Office
- ✓ Alaska DEC
- ✓ CDC-ATSDR
- ✓ Other Tribes
- ✓ Other Local Govt.
- ✓ Consultant
- ✓ KSU-TAB



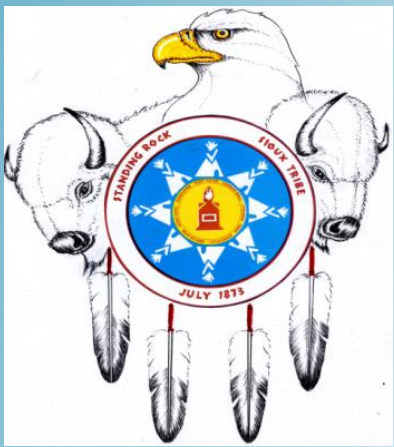
A Tribal Case Study

Standing Rock Sioux Tribe



**Tribal Response
Program: Hans Bradley
TRP Coordinator
Standing Rock Sioux
Tribe: Ft. Yates, ND**

**A Case Study:
DQOs, Background & Cleanup Levels**



Standing Rock Sioux Tribe

**Ft. Yates: Old Stockade Bldg.
Brownfields Grant Cleanup Project
2 TBAs Conducted by EPA Contractor**



Phase II TBA DQOs:

Screening Levels for Soil

Substance Name : Arsenic

- ✓ **Screening Criteria for the Hazard Ranking System (HRS)***
= 3 times background
- ✓ **EPA Regional Screening Levels: Industrial = 1.6 mg/kg**
(also = EPA Region 9 Preliminary Remediation Goals (PRGs))
“The industrial standard was selected over the residential standard because the industrial standard is more representative of SRST’s intended redevelopment of these sites.”

Use of Screening Levels: TBA Phase II Report

“Screening levels should not be used as cleanup levels.”

“Cleanup levels need to be determined through the performance of a risk assessment, which takes into account exposure pathway, affected population, toxicity, and exposure concentrations.”

TBA Phase II Report: 2010

- Because of the previous sampling in Fort Yates, which had arsenic detections higher than the RSL, naturally occurring arsenic was suspected in this area.
- Two background samples were collected to determine actual naturally occurring background arsenic levels.
- The background sample with the lowest reading contained 8 mg/kg arsenic. The naturally occurring arsenic level documented for the area is 7 mg/kg arsenic (USGS 1984).

TBA Phase II Report: 2010

Using the screening criteria for the Hazard Ranking System (HRS)*, samples with levels less than 3 times the background level, or 21 mg/kg arsenic, would *not be considered a hazardous release.* (3 X 7 mg/kg)

None of the samples collected from the three Fort Yates sites had arsenic levels that exceeded 21 mg/kg arsenic.

**HRS used to rank sites for the Superfund (NPL)*

Field XRF vs Laboratory

6/10/2010 TBA Sample: Arsenic in Soils

Laboratory results = 9.2 Mg/Kg

Field XRF results= 27 Mg/Kg

- ✓ All four laboratory samples had arsenic levels that exceeded the Industrial RSL (1.6 Mg/Kg)
- ✓ All XRF Samples exceeded the HRS screening level (21 Mg/Kg)

CLEANUP OF ARSENIC IN SOILS NEEDED?

- Highest Laboratory Arsenic Level = 9.2 mg/kg
- The background sample with the lowest reading contained 8 mg/kg arsenic.
- Field XRF levels not accurate and did not meet DQOs

CLEANUP OF ARSENIC IN SOILS NEEDED?

Conclusions:

There was no significant number of laboratory analysis of soil samples that significantly exceeded the background level.

Therefore, the significant presence of Arsenic in soils above background levels in the area of the Old Stockade Building is not indicated.

Therefore: Cleanup of Arsenic Needed?



Bottom Line:

Do you need to:

- Establish Authority?
- Adopt “Cleanup Standards” or a “Cleanup Decision Making Process”?

Lessons Learned

- *There is a significant need for more training, experience and real-time on-scene technical assistance in this area.*

and

- *Cleanup mistakes can be costly and not protect the public health or the environment!*

Tribal Implementation

- Identify existing response sites where Tribal oversight is necessary and appropriate.
- Determine what tribal or other authorities exist or need to be improved or created to fully implement a tribal decision on a cleanup.
- Where Tribe does not have jurisdiction, determine tribal role(s) and means for input or oversight.

Tribal Implementation

- Collaboration and sharing among tribes of case studies and situations;
- More opportunities for tribal staff to learn from the experts and consult experienced EPA/Fed/State risk assessment staffs.

Brownfields Grant Recipients' Road Map to Understanding Quality Assurance Project Plans

TAB Assistance to Tribes: Contacts

- the KSU TAB web site: www.ksutab.org
- Email to KSU Team Leaders:
 - ❖ Oral Saulters, Tribal TAB Director, osaulter@ksu.edu
(785)280-0931
 - ❖ Mickey Hartnett, Co-Director, envirofields@rushmore.com
(605) 721-8088
 - ❖ Blase Leven, KSU TAB Programs Coordinator, baleven@ksu.edu

No application process, just contact us!

*QAPPS
and
Cleanup
Standards
& Decision
Making*

ATCEM 2017



Steps in the Development of “DQOs”

Step 1: Problem Statement



WHAT ARE THE PROBLEMS THAT NEED
TO BE ASSESSED OR RESOLVED AND
THE OVERALL OBJECTIVES OF THE
PROJECT/ASSESSMENT?

- ✓ **current risks?**
- ✓ **future risks?**
- ✓ **planned reuse?**

Step 2:

Identify the Decisions or Questions



**WHAT SPECIFIC DECISIONS NEED TO BE
MADE OR QUESTIONS NEED TO BE
ANSWERED BASED ON THE DATA
COLLECTED?**

- ✓ **Cleanup needed ?**
- ✓ **Land use planning ?**
- ✓ **Institutional Controls ?**

Step 3:

Describe Inputs to the Decision(s)



WHAT TYPES OF DATA ARE REQUIRED, HOW
WILL THE DATA BE OBTAINED & MANAGED, AND
HOW WILL THE DATA BE USED TO MAKE
DECISIONS?

- ✓ **types and location of contaminants?**
- ✓ **Cleanup methods and costs?**
- ✓ **federal/state/local requirements?**

Step 4:

Define the Boundaries of the Study Area



WHAT ARE THE SPATIAL (PROPERTY)
BOUNDARIES OF THE STUDY AREA?

- ✓ **Property or geographic lines?**
- ✓ **extent or intensity of sampling?**
- ✓ **one or multiple areas?**
- ✓ **media boundaries?**

Step 5:

Develop a Decision Rule



HOW WILL DATA COLLECTED BE SUMMARIZED
(REPORTED) AND USED TO MAKE DECISIONS?

- ✓ **Required format or program?**
- ✓ **minimum detects?**
- ✓ **Action Levels?**
- ✓ **Public meeting?**

Step 6: Specify Limits on Uncertainties



WHAT ARE THE CONSTRAINTS OR LEVELS OF
UNCERTAINTY IN THE DATA THAT WILL BE
CONSIDERED ACCEPTABLE?

- ✓ **Degree of accuracy needed?**
- ✓ **field data vs modeling?**
- ✓ **MDLs appropriate?**

Step 7:

Optimize the Study Design



WHAT IS THE MOST COST-EFFECTIVE DESIGN
THAT IS EXPECTED TO MEET THE DATA QUALITY
OBJECTIVES?

- ✓ **Time & Budget realistic?**
- ✓ **Need to refine scope?**
- ✓ **need to phase field work?**